DOCUMENT RESUME

ED 173 126 SE 027 959

AUTHOR Adams, Gary H., Comp.
TITLE Science for the Physically Handicapped in Higher Education: A Guide to Sources of Information.
INSTITUTION National Oceanic and Atmospheric Administration (DOC), Washington, D.C. Environmental Data Service.
PUB DATE Apr 79
NOTE 39p.

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Access to Education; Ancillary Services; *Career Opportunities; Educational Opportunities; Equipment; Federal Programs; Higher Education; *Information Needs; Information Utilization; *Physically Handicapped; Reference Materials; Rehabilitation; *Science Education
IDENTIFIERS *National Oceanic and Atmospheric Administration

ABSTRACT

This guide is intended to be a reference for persons needing to know where to find information about science education, career opportunities, and other programs for physically handicapped individuals. Sources listed in the guide include: (1) Federal agencies that run assistance programs for the handicapped; (2) Professional societies specifically interested in promoting opportunities in science for the handicapped; (3) Organizations and companies that provide assistance in making laboratories or buildings accessible and manufacture special equipment for handicapped persons; (4) Libraries and information centers which have science education collections or act as clearinghouses for science career, education, financial, and equipment information; (5) Printed sources, such as directories, handbooks, and guides which provide information about handicapped scientists, recruitment and admissions of handicapped students, funding sources, and accessible universities and their programs; and (6) Computerized information systems which provide on-line access via teletypewriter terminals to databases which contain information on science education, research, and teaching materials for handicapped students. The guide should be of interest to educators, administrators, and researchers in all areas of secondary education, rehabilitation, universities, businesses and government. (Author/SA)

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SE 027 959

Science for the Physically Handicapped in Higher Education

A Guide to Sources of Information

April 1979

Compiled by Gary H. Adams
Environmental Science Information Center
Library and Information Services Division
Rockville, Md. 20852

U.S. DEPARTMENT OF COMMERCE
Juanita M. Kreps, Secretary

National Oceanic and Atmospheric Administration
Richard A. Frank, Administrator

Environmental Data and Information Service
Thomas S. Austin, Director

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FOREWORD

This guide is a concise, ready reference for persons who need to know where to find information about science education and career opportunities for physically handicapped individuals. The sources found in this guide can provide information to educators, administrators, researchers, and businesses seeking ways to implement science education and career programs in their establishments, as well as to potential scientists and engineers who have a physical handicap and need information about programs, career opportunities, and educational funding sources.

Sources used in compiling this guide include the Directory of National Information Sources on Handicapping Conditions and Related Services, HEW, Washington, D.C., 1976, and material obtained through contact with the professional societies and associations listed in Section B. Any mention of private information service vendors or manufacturers of specialized products or services is for purposes of identification and example only. This does not constitute endorsement of these groups by the U.S. Department of Commerce or the National Oceanic and Atmospheric Administration, and should not be used in advertising in any manner.

A. GOVERNMENT

1. Department of Commerce

NATIONAL TECHNICAL INFORMATION SERVICE
(NTIS)
5285 Port Royal Road
Springfield, VA 22161
PHONE: 703-557-4600

NTIS is the central source for the public sale of Federal Government analyses prepared by special technology groups (groups providing inquiry services, data books, and research reports and newsletters in a specific technical area). The NTIS information collection exceeds 900,000 titles, and all are available for sale. Research reports available on handicapped persons and handicapping conditions vary with the number of agencies depositing reports in this area.

NTIS offers a number of information services to lay and professional persons to assist them in locating reports available in their areas of interest. These services include computer-based bibliographic search services, announcement and abstracting services, sale of publications, and general public information services.

Some Federal Government agencies contributing to NTIS include the Departments of Agriculture; Commerce; Defense; Health, Education, and Welfare; Housing and Urban Development; Interior; Labor; State; Transportation; Treasury; Environmental Protection Agency; and National Science Foundation.

2. Department of Health, Education, and Welfare

BUREAU OF EDUCATION FOR THE HANDICAPPED
(BEH)
Office of Education
400 Maryland Avenue, SW.
Washington, DC 20202
PHONE: 202-245-2709

BEH is the principal agency within the Office of Education (OE) for developing Federal policy and administering and carry-

ing out programs and projects for the education and training of handicapped individuals. BEH has four divisions: (1) Division of Innovation and Development, which provides support for development and dissemination of results of applied research in education, (2) Division of Personnel Preparation, which administers grants and provides guidance, technical assistance, and support to colleges, universities, State educational agencies, and nonprofit institutions to train teachers, clinicians, and allied personnel in special education, (3) Division of Assistance to States, which administers programs of financial assistance to State and local education agencies for developing and implementing plans and programs for the education of handicapped children, and (4) Division of Media Services, which administers a loan service of captioned films for deaf persons, and disseminates other media products (films, tapes, videotapes, etc.) to handicapped persons and persons working with handicapped individuals.

CLEARINGHOUSE ON THE HANDICAPPED
Office for Handicapped Individuals
338D Hubert H. Humphrey Building
200 Independence Avenue, SW.
Washington, DC 20201
PHONE: 202-245-1961; TTY: 202-245-8645

The Clearinghouse on the Handicapped acts primarily as a national referral center for questions related to handicapped individuals and serves all persons and organizations seeking information on handicapped individuals. The Clearinghouse also tries to make other information services and organizations better known and more appropriately used by the public, and to foster dialog and cooperation among information providers. Areas in which the Clearinghouse is accumulating and producing its own materials include Federal funding sources and legislation relevant to handicapped persons.

The Clearinghouse provides the following information services to lay and professional inquirers: (1) answers inquiries by phone or letter, (2) refers inquirers to other information centers or direct service providers

at the national level, (3) sends brochures, pamphlets, and fact sheets, (4) sends previously prepared bibliographies and resource lists, and (5) sends its own newsletter Programs for the Handicapped.

REHABILITATION SERVICES ADMINISTRATION
(RSA)
Office of Human Development
Room 4324 Switzer Building
Washington, DC 20201
PHONE: 202-24[illegible]0322

RSA implements most of the Rehabilitation Act of 1973. RSA is part of the State-Federal vocational rehabilitation program created in 1920 by the Industrial Rehabilitation Act. The basic purpose of this program is to help disabled persons become employed. Services are provided through State Vocational Rehabilitation agencies funded through a formula grant on a four-to-one Federal-State matching ratio. State Vocational Rehabilitation agencies operate according to a plan filed with RSA which follows requirements specified by law. The State agency determines eligibility for services. For information about services, contact your State Vocational Rehabilitation Division. The phone number and address can be found in the State Government listing of your phone directory, usually under the State Department of Public Instruction.

Additional grant-in-aid programs make possible rehabilitation services, training of personnel, construction of rehabilitation facilities, and basic and applied research into new concepts of rehabilitation. General information about specific programs is provided to agencies, professional groups, and others interested in Research and Development grant applications, counselor training, and other RSA programs.

For the lay and professional inquirer, RSA provides the following information services: (1) answers induiries by phone or letter, (2) refers inquirers to other information centers, (3) send brochures, pamphlets, or fact sheets, and (4) sends the RSA magazine American Rehabilitation on re-

quest. Professional inquirers are provided with previously prepared bibliographies, indexes or abstracts, and films and other audiovisuals. Lay persons are referred to direct service providers when necessary. Information on the research, demonstration, and training programs supported by RSA is provided through the RSA Research Information System.

3. Independent Agencies

NATIONAL SCIENCE FOUNDATION (NSF)
Division of Scientific Personnel Improvement
Washington, DC 20550
PHONE: 202-282-7150

NSF's Physically Handicapped in Science Program seeks to increase the representation of the physically handicapped in scientific research and education. Proposals may be submitted by colleges, universities, schools for the handicapped, and nonprofit organizations.

PRESIDENT'S COMMITTEE ON EMPLOYMENT OF THE HANDICAPPED
1111 20th Street, NW.
Washington, DC 20210
PHONE: 202-653-5044

The President's Committee on Employment of the Handicapped provides a continuing public education and information program in cooperation with public and private groups to create attitudes favorable to employment of handicapped individuals. To this end, the Committee seeks to eliminate physical and psychological barriers; to further educational training, rehabilitation, and employment opportunities; and creates and delivers programs, plans, and information to State and local committees, including startup plans for local employment programs, publicity and advertising packages, guidelines, and other materials that provide assistance.

The Committee provides the following information services to professional inquirers: (1) answers inquiries by phone or letter, (2) refers inquirers to other information cen-

ters, (3) sends brochures, pamphlets, or fact sheets, (4) lends films or other audio-visuals, (5) makes inquiries of organizations on the inquirer's behalf, (6) prepares bibliographies, indexes, or abstracts in response to certain individual requests, and (7) permits onsite use of its holdings. The lay inquirer is generally referred to other information centers.

SMITHSONIAN SCIENCE INFORMATION EXCHANGE (SSIE)
Room 300
1730 M Street, NW.
Washington, DC 20036
PHONE: 202-381-4211

The function of SSIE, a nonprofit corporation of the Smithsonian Institution, is the collection, storage, and dissemination of prepublication information about research in progress in all fields of science, including those fields which pertain to handicapped individuals and handicapping conditions. SSIE collects single-page Notices of Research Projects (NRP's) from organizations that sponsor research, including Federal, State, and local government agencies; nonprofit associations and foundations; colleges and universities; and, to a limited extent, private industry and foreign research organizations. Project descriptions are collected when work is begun and are usually available for retrieval well before progress and final reports appear in published literature. The active search file covers the two most recent Federal Government fiscal years' information and contains over 200,000 descriptions of projects in the life and physical sciences (agricultural sciences, behavioral sciences, chemistry and chemical engineering, earth sciences, electronics and electrical engineering sciences, mathematics, medical sciences, physics and social sciences, and economics). At present about 8,000-12,000 projects are registered in research fields pertaining to handicapped individuals, such as hospital and medical facilities, nursing, prosthesis and artifical organs, rehabilitation, surgery, therapy, counseling, education, and developmental psychology.

VETERANS ADMINISTRATION (VA)
810 Vermont Avenue, NW.
Washington, DC 20420
PHONE: 202-389-2214

VA administers laws covering a wide range of benefits for former members and dependents and beneficiaries of deceased former members of the Armed Forces and for dependent children of seriously disabled veterans. The Department of Veterans Benefits conducts an integrated program of veterans' benefits. The Education and Rehabilitation Service administers programs for vocational rehabilitation of disabled veterans, readjustment educational benefits for veterans of post-Korea conflict service, and educational assistance and special restorative traing for wives (husbands), widows (widowers), and children of veterans who are permanently and totally disabled or die from disability incurred or aggravated in active service in the Armed Forces or are prisoners of war or missing in action. The Veterans Assistance Service provides advice and assistance to veterans, their dependents and beneficiaries, representatives, and others in applying for benefits administered by the VA. Benefit information and readjustment assistance are provided to recently separated veterans, including professional guidance in resolving socioeconomic, housing, and other related problems. Other benefits include loan guaranty and insurance.

B. PROFESSIONAL SOCIETIES AND ASSOCIATIONS

1. AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE (AAAS)
Project on the Handicapped in Science
Office of Opportunities in Science
1776 Massachusetts Avenue, NW.
Washington, DC 20036
PHONE: 202-467-4497

The Project on the Handicapped in Science is designed to explore the barriers obstructing the entry and full participation of physically handicapped persons to education and employment opportunities in science and to

examine and evaluate ways in which the scientific professional associations can contribute to equal educational and occupational opportunity. The Project hopes to accomplish the following in its initial phase: (1) a heightened awareness on the part of the professional societies, their members, and organizations of and for handicapped individuals of the problems of handicapped persons in science, (2) wider participation in the activities of the professional associations by their handicapped members, (3) establishment of a network that joins the science community educators and employers to the organizations and agencies of and for handicapped individuals in order to remove career barriers, (4) changes in educational and employment policy as it relates to education and hiring of handicapped individuals, and (5) development of a national resource center for information on educational opportunities, employment trends, legislation, and similar areas of concern. The Project is also developing programs to improve the science education available to handicapped youth including programs on career education, preservice and in-service training of science educators, and an inventory of science resources for handicapped students. The Project's information is particularly strong in the areas of the accessibility of professional meetings, education and employment in science, and assistance available for handicapped individuals through professional associations.

The Project provides the following information services to lay and professional inquirers: (1) answers inquiries by phone or letter, (2) refers inquirers to other information centers or direct service providers, (3) makes inquiries of other organizations on the inquirer's behalf, (4) sends brochures, pamphlets, or fact sheets. AAAS also makes available to handicapped scientists many tapes on scientific subjects. The Projects makes information on careers in science (including the behavioral, natural, applied, biomedical, social, and mathematical sciences) available to interested handicapped students through referral. The Project will refer the students to: (1) an individual in

the professional association related to his/her career choice, (2) a scientist with a similar handicap who can give advice and support, and (3) a consumer group that deals with his/her areas of disability. The Project also counsels many students on a one-to-one basis and offers advice on career options and choices before referring the individual to a particular association.

2. FOUNDATION FOR SCIENCE AND THE HANDICAPPED
236 Grand Street
Morgantown, WV 26505
PHONE: 304-292-4554
304-293-4380

The Foundation acts as the professional link between society, science, education, and the handicapped. Its objectives are the following scientific and educational endeavors:

(1) The promotion of the benefit and welfare of handicapped scientists, including the development of increased employment opportunities in science;

(2) The planning, organization, and administration of educational programs to involve interested handicapped children, college students, and preprofessionals in the mainstream of science and to provide them with an adequate background for approaching the various scientific disciplines as vocational objectives;

(3) The planning, organization, and administration of research programs concerned with the development or the transfer of technology designed to improve the quality of life for the handicapped; and

(4) The dissemination of information regarding the ability of handicapped scientists to compete with their nondisabled peers for every scientific and management position.

Any person interested in the Foundation's objectives may become a member.

3. NATIONAL SCIENCE TEACHERS ASSOCIATION
(NSTA)
1742 Connecticut Avenue, NW.
Washington DC 20009
PHONE: 202-265-4150

NSTA seeks to foster excellence in all science teaching. NSTA has an Ad hoc Committee on Science for the Handicapped. In April 1978, NSTA, through a grant from NSF, held a working conference on Science Education for the Physically Handicapped in order to: (1) provide an assessment on the state-of-the-art, (2) make recommendations to Federal, State, and local agencies, etc., and (3) affect the quality of science education for physically handicapped students.

4. SCIENCE FOR THE HANDICAPPED ASSOCIATION
(SFHA)
University of Wisconsin-Eau Claire
SSS 201
Eau Claire, WI 54701

SFHA is an organization formed to promote science for all handicapped children. SFHA has several functions: (1) promote science for all handicapped students in our schools, (2) disseminate information on science for handicapped students, (3) promote and organize sessions on science for handicapped at the NSTA conventions, (4) publish a newsletter three or four times a year, (5) publish a bibliography on science for handicapped students, (6) encourage and assist individuals who ask for help with special needs in science for handicapped students, and (7) cooperate with agencies and organizations with similar goals.

SFHA publishes an infrequent newsletter containing bibliographic citations on science for the handicapped as well as descriptions of current research, conferences, and courses.

C. SCIENTIFIC EQUIPMENT AND BUILDING/LABORATORY MODIFICATION

The following organizations, companies, and research centers can provide information on how specific types of scientific equipment or laboratories can be modified to enable individuals with handicaps to use them. Some of the sources listed manufacture products that can be used in science-related jobs.

1. AMERICAN INSTITUTE OF ARCHITECTS (AIA)
   1735 New York Avenue, NW.
   Washington, DC 20006
   PHONE: 202-785-7229

AIA is interested in those architectural barriers that limit a physically handicapped individual's access to buildings. AIA promotes designs and/or regulations for the removal of physical and structural barriers, both exterior and interior. AIA provides information in the following barrier-free design areas: (1) general information on disabling conditions, (2) education or training of personnel dealing with handicapped individuals, (3) special needs of the handicapped employer (literature suggests facility modifications), (4) housing, (5) transportation, (6) recreation/physical education, (7) equipment/special devices/aids, (8) civil rights/legislation, and (9) research, especially research relating to the special needs of handicapped individuals. AIA's information is particularly strong in describing the "state-of-the-art" of barrier-free design.

AIA provides the following information services to lay and professional inquirers: (1) answers inquiries by phone or letter, (2) refers inquirers to other information centers or direct service providers, (3) makes inquiries of other organizations on the inquier's behalf, (4) sends brochures, pamphlets, or fact sheets, (5) sends previously prepared bibliographies, indexes, or abstracts, (6) prepares bibliographies, indexes, or abstracts in response to certain individual requests, and (7) permits onsite use of its holdings, which include library reference files, books, pamphlets, and newsletters. AIA has an active Task Force on

barrier-free design, which counsels the President's Committee on Employment of the Handicapped and other organizations such as the National Easter Seal Society for Crippled Children and Adults. The Task Force is also working to improve the standards for making buildings and facilities accessible to, and usable by, physically handicapped people. AIA has published a primary reference work Into the Mainstream: A Syllabus for a Barrier-free Environment, which is available to inquirers.

2. AMERICAN PRINTING HOUSE FOR THE BLIND
1839 Frankfort Avenue
Louisville, KY 40206

The Printing House provides services to schools and Braille publication of textbooks and reference books, as well as apparatus, talking books, and tape recordings. Its textbook offerings include large-type texts in health and hygiene, mathematics, science, social studies, and vocations and career education. Some tests and dictionaries are available. Of special interest to science students are the many tangible aids which include: (1) graphic aids for mathematics, (2) embossed and bold-line graph sheets, (3) geometric area and volume aid, (4) science measurement kits, (5) introductory simple machines, and (6) biological models.

3. NATIONAL CENTER FOR A BARRIER FREE ENVIRONMENT
7th and Florida Avenue, NW.
Washington, DC 20002
PHONE: 202-544-7333

The National Center for a Barrier Free Environment was organized to provide a national focus on programs to develop an accessible environment for disabled and mobility-restricted persons. Working with and through its members, the Center provides a central reference point and coordinating agency for national organizations, government agencies, local groups, and individuals concerned with eliminating the barriers that prevent disabled Americans from making full use of the manmade environment. Programs of the Center include: (1) operating a national

clearinghouse of information for professional designers, legislators and code officials, volunteers, disabled people, employers of handicapped workers, and concerned citizens, (2) assisting businesses, academic institutions, and others directed by recent Federal and State legislation to provide accessible facilities for all people, (3) providing assistance to public agencies and private concerns with authority or influence to accelerate removal of barriers, (4) initiating and assisting in drafting model legislation codes and regulations, and (5) using Center publications as timely reports on activities and developments across the Nation.

The Center provides the following information services to lay and professional inquirers: (1) answers inquiries by letter, (2) refers inquirers to other information centers, (3) sends brochures, pamphlets, or fact sheets, and (4) sends previously prepared bibliographies, indexes, and abstracts.

Any inquirer may also request single copies of the Center's newsletter Report, which contains information on activities and developments in barrier-free design.

4. NATIONAL INSTITUTE FOR REHABILITATION ENGINEERING (NIRE)
Consumer Advisory Service
97 Decker Road
Butler, NJ 07405
PHONE: 201-838-2500

NIRE was founded to use current technology to help persons with severe and multiple handicaps lead a better life through social and vocational rehabilitation. The Institute comprises medical professionals and engineers devoted to the design and construction of devices to help many types of handicapped people live and function despite their disabilities. It uses multidisciplinary human factor engineering and time/motion human performance efficiency methods. NIRE provides information on equipment and aids to assist severely handicapped persons in the following areas: (1) employment, (2) housing, (3) transportation, (4) homemaking, (5) overcoming architectural barriers, (6) recrea-

tion/physical education, (7) activities of daily living, and (8) maintenance (health). NIRE also has some information on education and training for professionals in the field of rehabilitation engineering.

NIRE has performed clinical research in the following areas: (1) subnormal vision, (2) visual field defects, (3) driving for handicapped persons, (4) electronic speech aids and clarifiers, (5) hearing difficulties, (6) wheelchairs and other mobility aids, (7) educational aids, and (8) totally blind, totally deaf, and multiple-handicapped. The purpose of the research has been to develop special equipment or systems to serve the individual's needs.

5. REHABILITATION RESEARCH AND TRAINING CENTERS (RT CENTERS)

RT Centers are located at various universities around the country and carry out research and other programs funded by the Rehabilitation Services Administration of HEW. Their mission is to "undertake research targeted toward the production of new knowledge which will improve rehabilitation methodology and service delivery systems, alleviate or stabilize handicapping conditions, and promote maximal social and economic independence; and secondly, to institute related teaching and training programs to disseminate and promote the utilization of the research findings, thereby reducing the usual long intervening delay between the discovery of new knowledge and its wide application in practice."

An example of one of the RT Centers is:

Job Development Laboratory
Rehabilitation Research and Training Center
George Washington University
Room 420, 2300 I Street, NW.
Washington, DC 20037
PHONE: 202-676-3847

The Center has done research and implemented programs in the following areas:

Opening of science careers to the handicapped

Model for successful placement of persons with severe disabilities

Human engineering related to the disabilities

Other RT Centers and descriptions of their research efforts and programs can be found in the Research Directory of the Rehabilitation Research and Training Centers listed in Section E of this guide.

6. SCIENCE FOR THE BLIND PRODUCTS (SFB)
Box 385
221 Rock Hill Road
Wayne, PA 19087
PHONE: 215-664-9429

SFB is a profitmaking company with several functions: (1) the development and manufacture of special instruments for blind persons, (2) the sale of these instruments and other special aids and materials for the blind and visually limited individuals, and (3) the sale of general mail-order merchandise through sound sheet or audio catalogs, which allow persons unable to read print to have access to mail-order items available to sighted persons.

SFB provides the following information services to lay and professional inquirers: (1) answers inquiries by phone of letter, and (2) sends brochures, pamphlets, or fact sheets. Information disseminated is primarily on the services and products of the organization. Free listings of products are available on request. Instruments for sale may be applicable to business, profession, hobby, or home use.

Examples of products available are: audicators (a sound source that performs various operations including alerting a blind individual to flashing phone lights, liquid levels, etc.), aud-a-balls, calcu-tacs (calculators with Braille printouts), Braille clocks, and other items. SFB is often called upon to assist with fabrication or adaptation of tools

or instruments for specific job applications. Often an instrument can be modified, or standard industry tools can be Brailled or adapted for use by visually limited persons.

7. TELESENSORY SYSTEMS, INC.
   3408 Hillview Avenue
   Palo Alto, CA 94304

This commercial company provides several sensory devices for the blind and persons with low-vision.

Optacon (OPtical-to-TActile CONverter) converts inkprint to tactile form. A blind person uses the device by moving a small camera across a line of print. As the camera moves, the print image is reproduced on a screen in raised characters that can be felt with the finger. The system weighs about 4 pounds and includes the camera, the electronics section, and the screen for array. For computer programmers, a Cathode Ray Tube Lens Module attaches to the optacon to permit the user to read displays directly. There are also a calculator lens module attachment, a typewriter lens module that enables the reader to fill out forms or read letters as they are typed, and a magnifier lens module that magnifies very fine print. There are automatic page scanners to increase reading speed and tracking aids to reach students the use of the camera.

D. LIBRARIES AND INFORMATION CENTERS

1. ACCENT ON INFORMATION (AOI)
   Gillum Road and High Drive
   P.O. Box 700
   Bloomington, IL 61701
   PHONE: 309-378-4213

AOI is a computer-automated retrieval system operated by Accent on Living, Inc. The system contains information designed to help persons with disabilities live more effectively by providing them with information on the following subject and problem areas: (1) products and devices, (2) mobility aids, (3) mobility problems, (4) vocations, (5) employment, including vocational rehabilita-

tion, training, and rights, hiring regulations, and special needs of the handicapped employee, (6) social change, (7) housing and architectural barriers, (8) private and government assistance, (9) organizations, (10) special facilities, (11) special laws and legislation, (12) furniture, (13) business machines, (14) use of tools, (15) remote controls, (16) voting (e.g., accessibility of voting booths), (17) formal education of handicapped individuals, (18) activities of daily living, (19) communications, (20) recreation, and (21) physical education. The information service is particularly strong in the areas of activities of daily living and equipment/special devices/aids. AOI does not include a large amount of information on research; however, it does have isolated pieces of information on research of specific importance to disabled people, e.g., spinal cord injury research and new mobility aids.

2. B'NAI B'RITH CAREER AND COUNSELING SERVICE (BBCCS)
1640 Rhode Island Avenue, NW.
Washington, DC 20036
PHONE: 202-857-6600

The national office of BBCCS primarily disseminates information about its own network of local counseling services that provides vocational counseling, testing, and other services.

General information published about disabling conditions and career options for handicapped individuals also is available. In addition, information is provided in the following areas: (1) formal education of handicapped individuals, (2) employment, including vocational rehabilitation and training, rights and special needs of the handicapped employee, and employment of personnel dealing with disabled persons, and (3) psychosocial services.

The service provides the following information services to lay and professional inquiries: (1) answers inquiries by phone or letter, (2) refers inquirers to other information centers or direct service providers, (3) makes inquiries of other organizations

on the inquirer's behalf, (4) sends brochures, pamphlets, or fact sheets, (5) sends the organization's newsletter, (6) provides limited films, and (7) sends previously prepared bibliographies, abstracts, or indexes for special, individual requests by professionals.

ERIC CLEARINGHOUSE FOR SCIENCE, MATHEMATICS AND ENVIRONMENTAL ED.
THE OHIO STATE UNIVERSITY
1200 CHAMBERS RD., RM. 310
COLUMBUS, OH 43212
PHONE: (614) 422-6717

The ERIC Clearinghouses have responsibility for acquiring the significant educational literature within their particular areas, selecting the highest quality and most relevant material, processing (i.e., cataloging, indexing, abstracting) the selected items for input to the database, and also for providing information analysis products and various user services based on the database. The Clearinghouse on Science, Mathematics, and Environmental Education handles information on all levels of science, mathematics, and environmental education: development of curriculum and instructional materials; media applications impact of interest, intelligence, values, and concept development upon learning; and preservice and inservice teacher education and supervision.

4. LAWRENCE HALL OF SCIENCE
Science and Mathematics Education Library
Centennial Drive
Berkeley, CA 94720
PHONE: 415-642-1334

The Library supports the research professionals, faculty, and students at the Lawrence Hall of Science. Research emphasis is science education, instruction, and curriculum development at elementary, secondary, and college levels. The Library has holdings of over 7,000 books and subscribes to 85 journals. Service includes reference, interlibrary loan, and photocopying.

5. NATIONAL CLEARING HOUSE OF REHABILITATION MATERIALS (NCHRM)
Oklahoma State University
Room 115, Old USDA Building
Stillwater, OK 74074
PHONE: 405-624-7650

NCHRM is part of the Rehabilitation Counselor Training Program at Oklahoma State University. Its mission is to disseminate selected materials (principally training materials) such as abstracts, monographs, articles, final reports, booklets, audiotapes, videotapes, and slide presentations in wide subject categories to professionals in rehabilitation, especially rehabilitation counselors. NCHRM provides information (through its materials) in the following areas: (1) general information on disabling conditions, (2) education and training of personnel working with handicapped individuals, (3) employment, including vocational rehabilitation and training and rights, hiring regulations and special needs of handicapped employees, (4) health, including diagnostic evaluation, treatment, rehabilitation, and maintenance, (5) psychosocial services, (6) income maintenance/security, (7) recreation/physical education, (8) activities of daily living, (9) equipment/special devices/aids, (10) civil rights/legislation, and (11) research.

6. NATIONAL REHABILITATION INFORMATION CENTER (NARIC)
308 Mullen Library
The Catholic University of America
Washington, DC 20064
PHONE: 202-635-5826

NARIC is funded by the Rehabilitation Services Administration, HEW, to improve information delivery to the rehabilitation community by (1) supplying copies of research reports and audiovisual materials prepared with RSA funding, as well as journal articles, conference proceedings, and other types of publications; (2) preparing bibliographies tailored to specific requests; and (3) helping to locate the answers to factual questions such as dates, places, names, addresses, or statistics.

NARIC's services are intended to support professionals and others involved in the rehabilitation of physically or mentally disabled individuals. Its collection includes materials relevant to the rehabilitation of all disability groups, as well as documents on professional and administrative practices and concerns.

7. SCI-PHI (SCIENCE CAREER INFORMATION FOR THE PHYSICALLY HANDICAPPED INDIVIDUAL
Thomas County Schools
P.O. Box 440
Thomasville, GA 31792
PHONE: 912-226-7102

The central purpose of this project was to design, produce, and fieldtest a science-related career information and guidance system to encourage and assist secondary students and adults, with visual, hearing, and/or orthopedic handicaps, to enter science careers. The following products were developed with the assistance of the project's Handicapped National Science Advisory Board: (1) 228 Science Career Briefs in large print, microfiche, sound-cued audiotape and Braille formats, (2) 10 sound filmstrips depicting approximately 60 handicapped scientists filmed on-the-job, (3) radio and TV public service announcements to inform the handicapped and general public about science career opportunities for the physically handicapped, (4) a Science Career Guide for the Visually Handicapped Student, (5) self, career exploration and decision-making exercises, (6) companion science and work-related glossaries for those with severe hearing handicaps, and (7) a Final and External Evaluation Report.

In summary, the working philosophy of SCI-PHI is that any person, regardless of his/her assets or liabilities, should be provided with information about all science-related career options and opportunities, information translated into appropriate media for independent use, and information that will permit the user to make better decisions.

The products can be used independently by handicapped and nonhandicapped individuals in classrooms, rehabilitation centers, and other career guidance settings, as well as for pre- and in-service training of personnel for these locations.

E. BIBLIOGRAPHIES AND STATE-OF-THE-ART

1. Redden, Martha R., et al. 1978. Science for handicapped students in higher education: barriers, solutions and recommendations. American Association for the Advancement of Science Publication 78-R-2. Washington, DC. 74 pp.

This conference was held to explore barriers to science education faced by handicapped students. Barriers identified and examined were attitudinal, informational, environmental, communication, academic, and financial with attitudinal considered the most devastating in keeping handicapped individuals out of the mainstream of science education. Participants in the conference included handicapped scientists and students who made recommendations and developed strategies for overcoming barriers to science education for the handicapped. Contains good bibliography and concise directory of organizations interested in the handicapped.

2. Hofman, Helenmarie, editor. 1978. Science education for handicapped students. Proceedings of a working conference. National Science Teachers Association, Washington, DC. 194 pp.

The purpose of the National Science Teachers Association (NSTA) Conference on Science Education for Physically Handicapped Students was divided into three goals:

- to provide an assessment of the state-of-the-art;

- to make recommendations to Federal, State, and local agencies, institutions and organizations for science education and careers in science and related

fields for physically handicapped students; and

- to affect ultimately the quality of science education for physically handicapped students.

The NSTA working conference on Science Education for Physically Handicapped Students was held April 3, 4, 5, 1978 in Arlington, Va. The conference was supported by a grant from the National Science Foundation. Attending the conference were participants representing scientists, students, educators, administrators, parents and counselors, session leaders, staff, and conference committee members.

3. Stolte, Joanne B., editor. 1978. Is science a possible career for you? National Science Foundation, Physically Handicapped in Science Program, Washington, DC

The Research for Better Schools, 1700 Market Street, Philadelphia, PA 19103 carried out a science career development program that was designed especially for deaf students.

Handicapped students face several barriers when they consider science careers: the lack of role models, little science content in their schooling, discrimination, and fear of failure. Deaf students face all these problems, yet suffer the additional burden of a communication barrier. This program responds to these conditions. Designed to meet the unique needs of deaf students in language, science education, and science career development, it fills a void in the career development resources now available for deaf students. Throughout the program, students are encouraged to study and learn more about science: there are role models, visits to places where scientists work, a look at what science-related jobs are available, an awareness of what science preparation beyond high school is now accessible, and a realization that science does offer career opportunities for handicapped people, women, and/or minorities.

The materials are designed for 13- to 16-year-olds. The lessons can easily be infused into an existing course and/or program (e.g., a career development program, science course, or social studies program). A printed Teacher/Counselor Guide and a captioned filmstrip are provided to help the teacher and student develop awareness of science career opportunities for deaf individuals. A complete description of the program can be obtained free from the Research for Better Schools, Inc.

4. Keller, E.C., Jr.
   1978. Student science training program in marine science for the handicapped. Final report. National Science Foundation, Washington, DC

This program was funded by the NSF, carried out by West Virginia University, and held at Wallops Island, VA. Its purpose was to expose precollege handicapped students (blind, deaf, and orthopedic) to field and laboratory experiences in the marine sciences while familiarizing them with the background of information and experiences necessary to comprehend the basic processes, structures, and functions of the disciplines.

The program involved collecting, identifying, and preserving marine specimens; studies of the behavior of animals in the intertidal zone; habitat adaptations; ecology of estuaries; and communication by aquatic organisms. The program demonstrated that providing field experiences for handicapped students does not increase costs very much, but does require good planning, contingency plans, and some prefield experience simulation. Further, it showed that the laboratory/field experience does not have to be eliminated from the science education process for the physically handicapped.

5. Ricker, Kenneth
   1975. Teaching science to handicapped students. Science for the Handicapped Association. Newsletter N.5.

This bibliography has been consolidated with earlier ones of SHA and is currently updated in their newsletter--available free

from SHA. The bibliography contains references from journals, conference proceedings, research reports, and books to literature on science education teachings and program development for handicapped students.

6. Stolte, Jeanne
   1977. **Science career development for the handicapped. Research for Better Schools, Philadelphia, PA. 7 pp. (unpublished)**

This bibliography was compiled as part of a National Science Foundation proposal on science career development for the deaf. Available from the Research for Better Schools, Suite 1700, 1700 Market Street, Philadelphia, PA 19103. 215-561-4100.

7. Bybee, R.W.
   1972. A review of the literature on science for the deaf. Science Education, v. 56, no. 2. pp. 237-242

F. DIRECTORIES, GUIDES AND HANDBOOKS

1. American Association of Collegiate Registrars and Admissions Officers and the American Council on Education
   1978. Recruitment, admissions and handicapped students. Office of Civil Rights, HEW, Washington, DC. 59 pp.

Guidelines are provided to help institutions of postsecondary education achieve and improve access for handicapped students in compliance with Section 504 of the Rehabilitation Act of 1973. Primary focus of the guide is on how the Act affects the recruitment and admissions policies and practices of colleges and universities. Section 504 activities that are part of the admissions process are discussed: recruitment, publications, application forms, interviews, and recommendations, testing, financial aid, orientation, registration, and grievance procedures. The discussion of these activities includes citations from the regulation that affects that activity, an interpretation of the citations, some imperatives for institutional policy, and examples of how an insti-

tution can carry out both the letter and the spirit of the law. The appendixes contain the names and addresses of national organizations of handicapped persons, State administrators of vocational rehabilitation, and additional clearinghouses and sources of information.

2. Clearinghouse on the Handicapped, HEW

1976. Directory of national information sources on handicapping conditions and related services. Office for Handicapped Individuals, HEW, Washington, DC. 405 pp.

This directory lists 270 government and private sector organizations that have an interest in handicapped individuals. It was compiled as a major reference tool to enable the Clearinghouse on the Handicapped to make referrals in response to public inquiries, and as a service to other information providers to increase the understanding of each other's services. Each entry lists the organization's name, address, phone number, handicapping conditions served, scope of activities, and services.

3. Eckstein, Burton J., editor.
1978. Handicapped funding directory: a guide to sources of funding in the United States for handicapped programs and services. Research Grant Guides, Oceanside, NY. 163 pp.

This directory contains information on more than 400 foundations, associations, and government agencies that grant funds for projects related to handicapped persons. Entries include name of granting organization, address, type and size of grants, and brief application details.

4. Fenton, Joseph, editor.
1977. Research directory of rehabilitation research and training centers. Rehabilitation Services Administration, Washington, DC. 570 pp. (Annual publication available free from Office of Human Development Services, Special Centers. 202-245-0555)

This annual publications lists and abstracts the completed, continuing, and new projects of the Rehabilitation Research and Training Centers supported by the Rehabilitation Services Administration. Each entry contains project title, principal investigator, project status, dates, costs, objectives, methodology, findings to date, and applicability. The directory includes a subject and principal investigator index.

5. Gollay, Elinor, and Alwinn Bennett. 1977. The college guide for students with disabilities. Abt Associates, Cambridge, MA. 545 pp.

The College Guide is based upon a Federally funded, nationwide survey of colleges and universities. This one-of-a-kind directory collects and compiles data on more than 500 participating schools. Its contents include: (a) specific details for each campus on a wide range of special support services for the handicapped (e.g., attendants, readers, interpreters); (b) architectural accessibility information for each campus on a building-by-building basis, enabling the reader to identify the accessibility or particular fields of study within a school (depending on accessibility of specific facilities); (c) data on current handicapped student populations and organizations, as well as schools' widely varying flexibility in entrance procedures, "standard" requirements, and class rescheduling or relocation; (d) information on a wide range of non-campus based resources--sources of financial aid, State and Federal support agencies, community-based programs, learning aids, as well as useful definitions, discussion of legal issues, helpful hints for students, suggestions for administrators, etc.

6. Office for Handicapped Individuals, HEW 1977. Federal assistance programs serving the handicapped. U.S. Department of Health, Education, and Welfare, Washington, DC. 348 pp.

Excerpted from the "1977 Catalog of federal domestic assistance," the document describes Federal programs and activities ser-

ving the handicapped or people working with or for them. Following initial sections that cover the Office for Handicapped Individuals and its clearinghouse, definitions, instructions for using the Directory, and budget information, program descriptions are presented alphabetically by supporting agency and project title and coded for the following categories: formula grants to States, project grants and contracts, direct payments, direct loans, and guaranteed or insured loans, and nonfinancial assistance. Entries include information on: Office of Management and Budget identification number, program description, uses and use restrictions, types of assistance, eligibility requirements, application procedure, appropriations, program accomplishments, enabling legislation, and information contacts. A third section comprises an index to Federal departments and agencies represented in the Directory, a subject index, and an applicant eligibility index. Appended are a brief summary of programs not specifically directed toward handicapped individuals, a listing of resources for funding information, a bibliography of publications relating to funding, and addresses of State agencies serving handicapped individuals.

7. Redden, Martha R., et al.
1978. Resource directory of handicapped scientists. American Association for the Advancement of Science. Publication 78-13. Washington, DC. 79 pp.

This valuable reference and resource directory contains information on 550 scientists who are handicapped. Information includes current position, fields of specialty, address, type of handicap, date of handicap, and availability of scientist for consulting or serving as a role model. Indexed by geographical area, disability, and scientific discipline.

8. Redden, Martha R., et al.
1976. Barrier free meetings: a guide for professional associations. American Association for the Advancement of Science. Washington, DC. 73 pp.

Prepared by the AAAS Project on Handicapped in Science, the guide shows that it is not difficult to make a meeting accessible to the handicapped. Based on experiences at the 1976 AAAS Annual Meeting, the publication describes four stages of meeting planning. Initial Preparation discusses the early decisions that need to be made and tells how to assess physical facilities and transportation. Premeeting Preparation deals with final arrangements for services such as interpreters for the deaf and transportation for wheelchair users. During the Meeting explains how to deliver all the services with maximum efficiency, and Follow-Up centers on the essential task of evaluation. Many forms, resource lists, questionnaires, and publicity releases are included, along with drawings and photographs that illustrate the how and why of accessibility modification.

G. COMPUTERIZED DATABASES

This section contains computerized bibliographic and nonbibliographic databases that are selected from about 100 databases currently being offered commercially on the following information systems: Bibliographic Retrieval System (BRS), Lockheed Information System, and the Systems Development Corporation (SDC). These information systems are used today and colleges and university libraries, government agencies, industry and research institutions. It is not possible to list all the libraries that offer user access to these systems. Persons who desire to have a database searched should contact any of the following companies and ask for the location of the nearest library or information center that offers their services:

Lockheed Information Systems
Code 5020/201
3251 Hanover Street
Palo Alto, CA 94304
PHONE: 800-227-1960 (Toll free--United States)
800-982-5838 (Toll free--California)

Systems Development Corporation
2500 Colorado Avenue
Santa Monica, CA 90406
PHONE: 213-829-7511

Bibliographic Retrieval Systems, Inc.
Corporation Park, Building 702
Scotia, NY 12302
PHONE: 518-374-5011

The following databases contain some references to published information, teaching materials information, and ongoing current research that relate to science education for the physically handicapped. The information stored in each database can be accessed by subject, i.e., retrieving all documents on science education or science laboratories or science curriculum, and then limiting those to ones that pertain to physically or aurally or visually handicapped at the secondary or postsecondary level.

1. Educational Resources Information Center (ERIC)
   Coverage: 1966 to present
   302,000 citations
   Available on Lockheed, SDC, or BRS

ERIC is the complete database on educational materials from the Educational Resources Information Center. It consists of two main files: Research in Education, which is concerned with identifying the most significant and timely education research reports and projects; and Current Index to Journals in Education, an index of more than 700 publications of interest to every segment of the educaitonal profession. Many items (aside from journal articles) can be purchased from the ERIC Document Reproduction Service in paper copy or microfiche. About 650 locations throughout the country have complete collections of the ERIC microfiche, and most are open to the general public.

2. National Instructional Materials Information System (NIMIS)
   Coverage: 1974 to present
   35,000 records
   Available on Lockheed, BRS

NIMIS contains descriptions of media and devices for use with handicapped children. Audiovisual materials and equipment, large print and Braille books, and many types of equipment and adaptive services for all handicapped levels are included. Media in the database cover a wide range of subject areas including language and language arts, sciences, health, vocational education, mathematics, fine arts, history, and religion. Also included are materials dealing with cognition and perceptual recognition, motor processes, guidance, and personal skills.

3. National Technical Information Service (NTIS)
   Coverage: 1964 to present
   641,000 citations
   Available on Lockheed, SDC, or BRS

The NTIS database consists of Government-sponsored research, development and engineering plus analyses prepared by Federal agencies, their contractors or grantees. It is the means through which unclassified, publicly available, unlimited distribution reports are made available for sale from such agencies as NASA, DDC, DOE, HEW, HUD, DOT, Department of Commerce, and some 240 other units. State and local government agencies are now beginning to contribute their reports to the file.

The NTIS database includes material from both the hard and soft sciences, including substantial material on technological applications, business procedures, and regulatory matters. Many topics of immediate broad interest are included, such as environmental, pollution and control, energy conversion, technology transfer, behavioral/societal problems, and urban and regional planning.

4. AIM/ARM
   Coverage: September 1967 to 1976
   17,500 citations
   Available on Lockheed

AIM/ARM is a specialized index for locating materials on vocational and technical education and the related areas of manpower

economics and development, employment, job training, and vocational guidance.

AIM/ARM provides subject and author indexes to the abstracts of the following: instructional materials developed by local school districts, State departments of education, curriculum development laboratories, industrial organizations, and research from U.S. Office of Education, Department of Labor, Office of Economic Opportunity, private foundations, and other organizations.

Since 1977 records that would have been added to the AIM/ARM database were included in ERIC.

5. Exceptional Child Education Resources (ECER)
   Coverage: 1966 to present
   26,000 citations
   Available on Lockheed or BRS

ECER is a comprehensive database concerned with published and unpublished literature on the education of handicapped and gifted children. More than 23,000 citations are included in the ECER database, covering such sources as books, journal articles, teaching materials, and reports. ECER is a valuable supplement to the Educational Resources Information Center (ERIC) database, because only about one-fourth of the ECER citations are duplicated in ERIC. All aspects of education of handicapped and gifted children are included.

6. SSIE Current Research
   Coverage: 1976 to present
   205,000 citations
   Available on Lockheed or SDC

SSIE (Smithsonian Science Information Exchange) Current Research is a database containing reports of both government and privately funded scientific research projects, either currently in progress or initiated and completed during the most recent 2 years. SSIE data are collected from the funding organizations at the inception of a research project and provide a source for information on current research long before first or pro-

gress reports appear in the published literature. SSIE Current Research encompasses all fields of basic and applied research in the life, physical, social, and engineering sciences.

Project descriptions are received from more than 1,300 organizations that fund research, including Federal, State, and local government agencies; nonprofit associations and foundations; and colleges and universities. A small amount of material is provided from private industry and foreign research organizations; 90 percent of the information in the database is provided by agencies of the Federal Government.

Research projects in SSIE Current Research include work in progress in the agricultural, behavioral, and biological sciences; chemistry and chemical engineering; electronics; physics; materials science; engineering; mathematics; medical sciences; and the social sciences and economics.

7. Foundation Directory
   Coverage: Current year's data
   3,200 listings
   Available on Lockheed

The Directory provides descriptions of more than 3,000 foundations that have assets of $1 million or more, or that make annual grants of $500,000 or more. Each foundation conforms to the general description of a "nongovernmental, nonprofit organization, with funds and programs managed by its own trustees or directors, and established to maintain or aid social, educational, charitable, religious, or other activities serving the common welfare, primarily through the making of grants." The foundations that qualify for inclusion account for nearly 90 percent of the assets of all foundations in the United States and 80 percent of all foundation giving. Grants are given primarily in the fields of education, health, welfare, sciences, international activities, and religion, in that order. Principal sources of information are voluntary reports of many foundations directly to the Foundation Center and information obtained from

public information returns that private foundations file each year with the Internal Revenue Service.

8. Foundation Grants Index
   Coverage: January 1973 to present
   47,000 records
   Available on Lockheed

Foundation Grants Index contains information on grants awarded by more than 400 major American philanthropic foundations, representing all records from the Foundation Grants Index of the bimonthly Foundation News. Information on grants given by foundations is useful in determining types and amounts of grants awarded, because foundations seldom announce the availability of funds for specific purposes. Each foundation conforms to the description of a "nongovernmental, nonprofit organization, with funds and program managed by its own trustees or directors, and established to maintain or aid social, educational, charitable, religious, or other activities serving the common welfare, primarily through the making of grants" as defined in the Foundation Directory, Edition 5. About 10,000 new grant records are added to the file each year. Grants are given primarily in the fields of education, health, welfare, sciences, interrational activities, humanities, and religion. Education is the most favored field for foundation giving. Grants to individuals and grants of less than $5,000 are not included.

Selective Dissemination of Information (SDI)

SDI is a convenient and effective method now used by many scientists and engineers to keep abreast of the recent developments in research and published literature in their fields of interest. Each of the three information systems that contain databases described in this section offers some form of this service. SDI involves a user's establishing an interest profile at a location (university library, government agency, etc.) that offers access to one of the bibliographic information systems (Lockheed, SDC, BRS).

Each month when the database is updated, the user's profile is automatically checked by the computer against the new information being added to the database for any relevant references. Results are then mailed to the user. For instance, if a user wants information on science education for the physically handicapped, they could request an SDI from ERIC and SSIE databases. The ERIC SDI would provide current literature references each month; the SSIE SDI would provide references to ongoing or new research projects.